

Bendix® TP-3™ Tractor Protection Valve

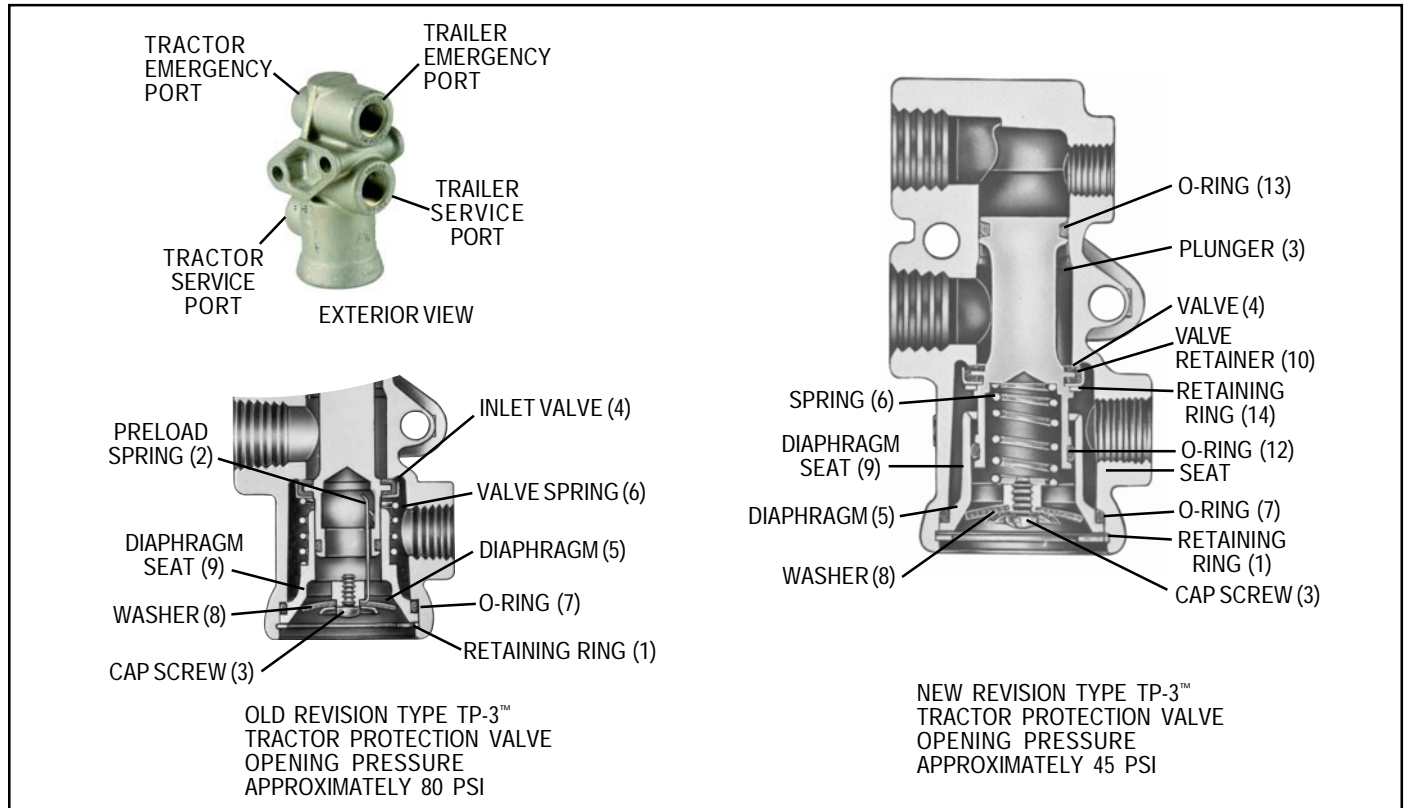


FIGURE 1

DESCRIPTION

The TP-3™ (See Figure 1) tractor protection valve is used in combination with the PP-3™ trailer supply valve on pre-121 tractors and the PP-7™ trailer supply valve on post-121 tractors. It contains a passage for trailer supply air and a service line shut off valve. It is normally mounted behind the cab with the delivery line from the trailer supply valve connected into the tractor emergency port and a delivery line from the brake valve connected to the tractor service port. The trailer supply and service hoses are mounted in their respective ports in the TP-3™ valve. (See Figure 2)

OPERATION

Air from the trailer supply valve passes through the emergency ports of the TP-3™ valve to supply the trailer air system and simultaneously exerts pressure on the end of the plunger (3). Figure 3. TP-3™ valves manufactured prior to June 1970 required approximately 80 psi on the plunger to

open the inlet valve (4) (See Figure 4) which opens the service line shut off line. Valves manufactured after June 1970 require approximately 45 psi to open the inlet valve. (Modification kit 265066 is available to modify old revision TP-3™ valves to the later revision 45 psi opening. Field maintenance kit 280858 contains the parts necessary to service both old and new).

Whenever the pressure from the trailer supply valve drops below 45 psi the TP-3™ valve will close the service line shut-off valve.

PREVENTIVE MAINTENANCE

Important: Review the Bendix Warranty Policy before performing any intrusive maintenance procedures. A warranty may be voided if intrusive maintenance is performed during the warranty period.

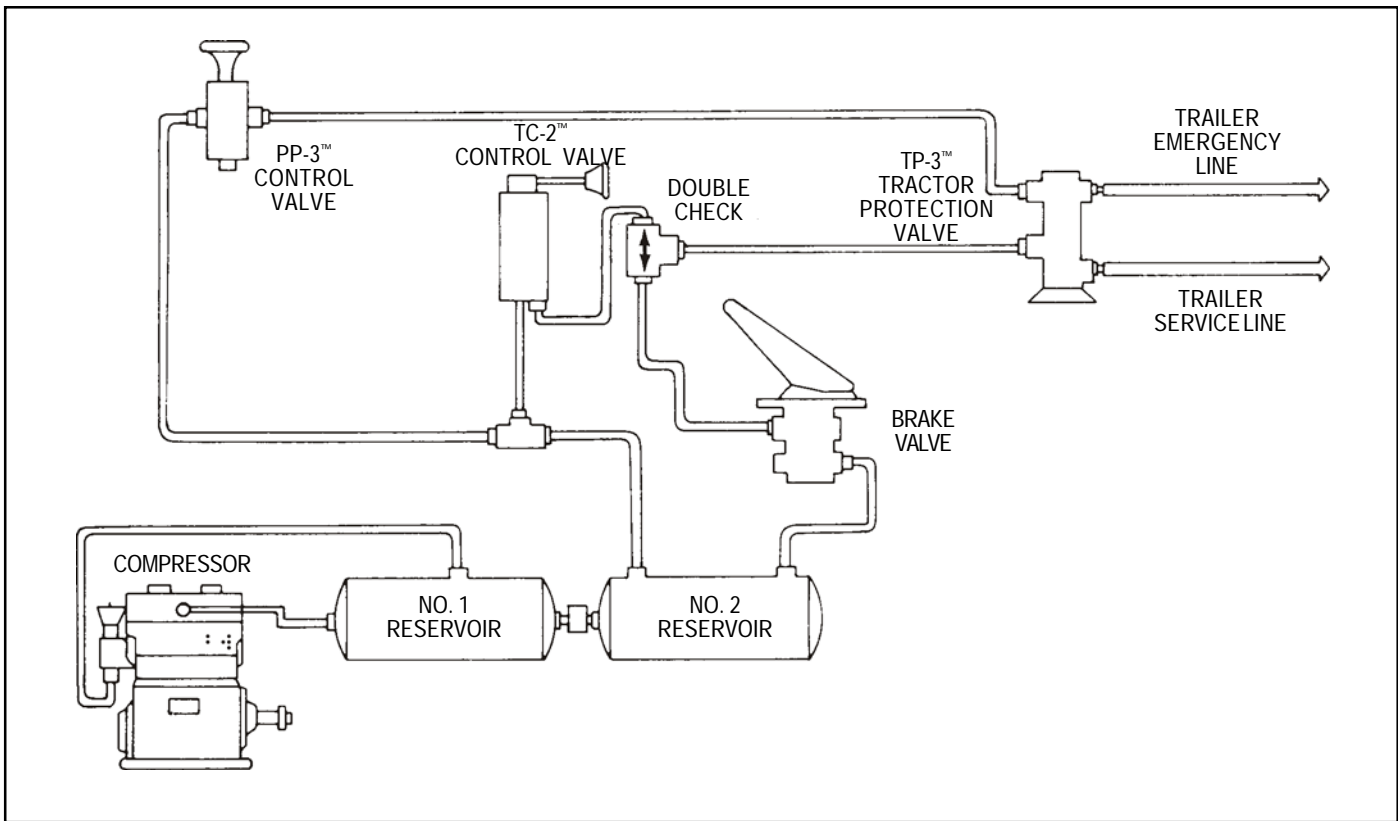


FIGURE 2

No two vehicles operate under identical conditions; as a result, maintenance intervals may vary. Experience is a valuable guide in determining the best maintenance interval for air brake system components. At a minimum, the TP-3™ valve should be inspected every 6 months or 1500 operating hours, whichever comes first, for proper operation. Should the TP-3™ valve not meet the elements of the operational tests noted in this document, further investigation and service of the valve may be required.

OPERATING AND LEAKAGE CHECKS

1. Block and/or hold the vehicle by a means other than air brakes during these tests. Place the trailer supply valve in the emergency position and disconnect the trailer supply and service couplings.
2. With tractor reservoirs charged to at least 100 psi make and hold a full service brake application. Leakage at either tractor hose coupling should not exceed a 1" bubble in 5 seconds (100 SCCM).
3. Connect the trailer supply or emergency line hose coupling and place the trailer supply valve in the "run" position. Leakage at the "service" coupling should not exceed a 1" bubble in 5 seconds (100 SCCM).
4. Connect the service coupling and make and hold a full service brake application: Leakage at the diaphragm end of the TP-3™ valve shall not exceed a 1" bubble in 3 seconds (175 SCCM).

NOTE: If the TP-3™ valve does not function as described or if leakage is excessive, it is recommended that it be returned to the nearest authorized Bendix parts outlet for factory rebuilt valve. If this is not possible, the valve should be repaired using genuine Bendix parts, in which case the following should prove helpful.

REMOVING

Remove trailer hose assemblies from the TP-3™ valve. Disconnect tractor service and supply lines and remove the TP-3™ valve.

INSTALLING

When installing the TP-3™ valve, refer to Figure 2 for proper connections along with the following explanation.

1. The delivery line from the trailer supply valve (PP-3™ or PP-7™) is connected to the tractor emergency port of the TP-3™ valve.
2. The delivery line from the brake valve (or double check valve) is connected to the tractor service port of the TP-3™ valve.
3. Trailer hose assemblies are installed in the trailer emergency and trailer service ports of the TP-3™ valve.

DISASSEMBLY

EARLY REVISION 80 PSI OPENING PRESSURE

(Figure 1)

1. Remove insert retainer ring (1) Figure 4 with Truarc pliers.
2. Remove insert assembly.
3. Place insert on smooth surface with plunger down.
4. Press down on exhaust diaphragm seat (9).
5. Preload spring (2) may unlock in this manner, if not, remove exhaust diaphragm cap screw (3), washer (8), diaphragm (5), and preload spring while holding the seat down against the valve spring (6) tension.
6. Separate the diaphragm seat, valve spring and plunger assembly.
7. Remove diaphragm seat o-ring (7).
8. Remove valve retainer (10) and inlet valve (4) from plunger. Remove plunger o-rings (12) and (13) Figure 3.

LATE REVISION 45 PSI OPENING PRESSURE

(Figure 1)

1. Remove diaphragm seat retainer ring (1) while holding diaphragm seat (9) in body.
2. Remove date code ring while still holding diaphragm seat in body.
3. Allow seat to rise until valve spring (6) force is no longer present.
4. Remove diaphragm seat assembly, valve spring and plunger assembly.
5. Remove diaphragm seat o-ring (7), Phillips screw (3), washer (8) and diaphragm (9).
6. Remove valve retainer ring (14), valve retainer (10), inlet valve (4), and o-rings (12) and (13) from plunger.

CLEANING AND INSPECTION

1. Clean all metal parts in mineral spirits and dry them completely.
2. Inspect all parts for excessive wear or deterioration. Inspect valve seats for nicks or burrs. Check the valve spring for cracks or corrosion.
3. Inspect the bores of the valve housing for deep scuffing or gouges.

Replace all parts that were discarded and any parts not found to be serviceable during inspection, using only genuine Bendix replacement parts.

ASSEMBLY

Before assembling the TP-3™ valve, lubricate all o-rings, o-ring grooves, body bores and rubbing surfaces with Bendix silicone lubricant (Pc. No. 291126) or equivalent.

NOTE: When using pipe thread sealant during assembly and installation, take particular care to prevent the sealant from entering the valve itself. Apply the sealant beginning with the second thread back from the end.

EARLY REVISION-OPENING PRESSURE 80 PSI

1. Position preload spring (2) then exhaust diaphragm (5) over stud boss in the diaphragm seat (9).
2. Place washer (8) with lip out on exhaust diaphragm, install and tighten cap screw (3).
3. Install snap-on valve (4) on plunger (13), position and force valve retainer (10) down over valve.
4. Install two (2) plunger o-rings (12) and (13) in their proper grooves.
5. Position valve spring (6) on diaphragm seat (9).
6. Force plunger (3) down into check valve seat until prong of preload spring snaps into inner cut in plunger and holds insert assembly together.
7. Position insert seal ring (3) on seat then place complete insert in TP-3™ valve body.
8. Using Truarc pliers, install insert retainer ring (1) in TP-3™ valve body. Make sure that ring snaps fully into its groove in the valve body.

LATE REVISION-OPENING PRESSURE 45 PSI

1. Install inlet valve (4) on plunger (3).
2. Position and force valve retainer (10) down over inlet valve.
3. Install retainer ring (14) beneath the inlet valve retainer.
4. Install both plunger o-ring (12) and (13) in the proper grooves.
5. Place plunger and valve assembly in valve body.
6. Install Phillips head screw (3), diaphragm washer (8) (cup side up) and diaphragm (5) into diaphragm seat.
7. Place inlet valve (6) spring into plunger.
8. Install diaphragm seat o-ring in body.
9. Position diaphragm seat assembly over spring and plunger assembly and force into the body.
10. Replace date code washer and install retaining ring (1) making sure the retaining ring snaps fully into the groove.

TESTING REBUILT TP-3™ VALVES

Perform operating and leakage checks as outlined in previous section.

GENERAL SAFETY GUIDELINES

WARNING! PLEASE READ AND FOLLOW THESE INSTRUCTIONS TO AVOID PERSONAL INJURY OR DEATH:

When working on or around a vehicle, the following general precautions should be observed at all times.

1. Park the vehicle on a level surface, apply the parking brakes, and always block the wheels. Always wear safety glasses.
2. Stop the engine and remove ignition key when working under or around the vehicle. When working in the engine compartment, the engine should be shut off and the ignition key should be removed. Where circumstances require that the engine be in operation, **EXTREME CAUTION** should be used to prevent personal injury resulting from contact with moving, rotating, leaking, heated or electrically charged components.
3. Do not attempt to install, remove, disassemble or assemble a component until you have read and thoroughly understand the recommended procedures. Use only the proper tools and observe all precautions pertaining to use of those tools.
4. If the work is being performed on the vehicle's air brake system, or any auxiliary pressurized air systems, make certain to drain the air pressure from all reservoirs before beginning **ANY** work on the vehicle. If the vehicle is equipped with an AD-IS® air dryer system or a dryer reservoir module, be sure to drain the purge reservoir.
5. Following the vehicle manufacturer's recommended procedures, deactivate the electrical system in a manner that safely removes all electrical power from the vehicle.
6. Never exceed manufacturer's recommended pressures.
7. Never connect or disconnect a hose or line containing pressure; it may whip. Never remove a component or plug unless you are certain all system pressure has been depleted.
8. Use only genuine Bendix® replacement parts, components and kits. Replacement hardware, tubing, hose, fittings, etc. must be of equivalent size, type and strength as original equipment and be designed specifically for such applications and systems.
9. Components with stripped threads or damaged parts should be replaced rather than repaired. Do not attempt repairs requiring machining or welding unless specifically stated and approved by the vehicle and component manufacturer.
10. Prior to returning the vehicle to service, make certain all components and systems are restored to their proper operating condition.
11. For vehicles with Antilock Traction Control (ATC), the ATC function must be disabled (ATC indicator lamp should be ON) prior to performing any vehicle maintenance where one or more wheels on a drive axle are lifted off the ground and moving.

